

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD AND SPECIFICATIONS**

FILTER STRIP

(Acre)
CODE 393

DEFINITION

A strip or area of herbaceous vegetation situated between cropland, grazing land, or disturbed land (including forest land) and environmentally sensitive areas.

PURPOSES

This practice may be applied as part of a conservation management system to support one or more of the following purposes:

- To reduce sediment, particulate organics, and sediment adsorbed contaminant loadings in runoff.
- To reduce dissolved contaminant loadings in runoff.
- To reduce sediment, particulate organics, and sediment adsorbed contaminant loadings in surface irrigation tailwater.
- To restore, create, or enhance herbaceous habitat for wildlife and beneficial insects.
- To maintain or enhance watershed functions and values

CONDITIONS WHERE PRACTICE APPLIES

This practice applies:

- 1) in areas situated below cropland, grazing land, forest land, or disturbed land;
- 2) where sediment, particulate organic matter and/or dissolved contaminants may leave these areas and enter environmentally sensitive areas;
- 3) in areas where permanent vegetative establishment is needed to enhance wildlife and beneficial insects, or maintain or enhance watershed function.

CRITERIA

General Criteria Applicable to All Purposes

The filter strip shall be designed to maximize uniform sheet flow of runoff. Shaping and grading ensure sheet flow may be required. Concentrated flows shall be dispersed.

Filter strips shall be designated as vegetated areas designed to treat runoff and are not part of the adjacent cropland rotation.

Filter strip establishment shall comply with local, state, and federal regulations.

State or county listed noxious weeds will not be established in the filter strip and will be controlled if present.

Do not use the filter strip as a roadway.

Additional Criteria to Reduce Sediment, Particulate Organics, and Sediment-adsorbed Contaminant Loadings in Runoff

Filter strip flow length shall be determined based on field slope percent and length, filter strip slope percent, erosion rate, amount and particle size distribution of sediment delivered to the filter strip, density and height of the filter strip vegetation, and runoff volume associated with erosion events. The minimum flow length for this purpose shall be 20 feet.

Filter strip location requirements:

- a) The filter strip shall be located along the downslope edge of a field or disturbed area. To the extent practical, it shall be established on the approximate contour. Variation in placement on the contour should not exceed a 0.5 percent longitudinal (perpendicular to the flow length) gradient.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version, contact the Natural Resources Conservation Service or download the standard from the Electronic Field Office Technical Guide for Missouri.

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b) The immediate drainage area above the filter strip shall have greater than 1 percent but less than a 10 percent slope.

c) The ratio of the drainage area to the filter strip area shall be less than 50 to 1.

d) The average annual sheet and rill erosion rate above the filter strip shall be less than 10 tons per acre per year.

The filter strip shall be established to permanent herbaceous vegetation consisting of a single species or a mixture of grasses, legumes, and/or other forbs adapted to the soil, climate, nutrients, chemicals, and cultural practices used in the current management system. Species selected shall have stiff stems and a high stem density near the ground surface. Stem density shall be such that the stem spacing does not exceed 1 inch.

Vigorous vegetative cover with adequate stem density will be established and/or maintained. Permanent herbaceous cover shall be established according to the CRITICAL AREA PLANTING (342) conservation practice standard.

Additional Criteria to Reduce Dissolved Contaminants in Runoff

All criteria given in “Additional Criteria to Reduce Sediment, Particulate Organics, and Sediment Adsorbed Contaminant Loadings in Runoff” shall also apply to this purpose.

Filter strip flow length required to reduce dissolved contaminants in runoff shall be based on management objectives, contaminants of concern, and the volume of runoff from the drainage area above the filter strip compared with the filter strip area and infiltration capacity.

The flow length determined for this purpose shall be in addition to the flow length determined for reducing sediment, particulate organics, and sediment-adsorbed contaminant loadings in runoff.

The minimum flow length for this purpose shall be 30 feet plus the primary flow length of 20 feet.

Pesticides used on the field may require a specific filter flow length as indicated on product labels or state regulations. These requirements for filter flow length will be used if greater than the minimum criteria in this standard.

Additional Criteria to Reduce Sediment, Particulate Organics, and Sediment-adsorbed Contaminant Loadings in Surface Irrigation Tailwater

Filter strip vegetation may be small grain or other suitable annuals with a plant spacing that does not exceed 4 inches.

Annual filter strips shall be established early enough prior to the irrigation season so that the vegetation can withstand sediment deposition from the first irrigation.

The flow length shall be based on sound management objectives. The minimum flow length shall be 25 feet for this purpose.

Additional Criteria to Restore, Create, or Enhance Herbaceous Habitat for Wildlife and Beneficial Insects

If this purpose is intended to be in combination with one or more of the previous purposes, then the minimum criteria for the previous purpose or purposes must be met.

Additional filter strip flow length devoted to this purpose must be added to the flow length required for the other purpose or purposes. The minimum additional flow length shall be 30 feet.

Any addition to the flow length for wildlife or beneficial insects may be added to the downhill slope of the filter strip.

Vegetation to enhance wildlife habitat may be added to that portion of the filter strip devoted to other purposes to the extent this vegetation does not detract from the primary functions.

Plant species selected for this purpose shall be permanent vegetation adapted to the targeted wildlife or beneficial insect populations.

The additional filter strip area for this purpose will be established according to the CONSERVATION COVER (327) standard. When selecting a planting mix for this purpose, use a mix containing multiple species with 60 percent or more of the species having a good to excellent wildlife rating in Table 2 of the CONSERVATION COVER (327) standard. Species rated poor for wildlife are not recommended in a filter strip for this purpose.

Density of the vegetative stand established for this purpose shall consider targeted wildlife habitat requirements and encourage plant diversity. Dispersed woody vegetation may be used to the extent it does not interfere with herbaceous vegetative growth or operation and maintenance of the filter strip.

The filter strip shall not be mowed during the nesting season for avian species from May 1 to July 15. If mowing is necessary to maintain the filter strip, mow between July 15 and August 15. Livestock grazing and vehicular traffic in the filter strip shall be excluded during this nesting period.

Additional Criteria to Maintain or Enhance Watershed Functions and Values

Filter strips shall be strategically located to enhance connectivity of corridors and non-cultivated patches of vegetation within the watershed.

Filter strips shall be strategically located to enhance aesthetics of the watershed.

Use and establish permanent vegetation according to the CRITICAL AREA PLANTING (342) conservation practice standard. The minimum flow length for this purpose shall be 20 feet.

CONSIDERATIONS

Evaluate the type and quantity of pollutant, slopes and soils, groundwater depth, adapted vegetative species, time of year for proper establishment of vegetation, necessity for irrigation, visual aspects, fire hazards, and other special needs.

Filter strips should be strategically located to reduce runoff and increase infiltration and ground water recharge throughout the watershed.

Filter strips for the single purposes of wildlife or beneficial insect habitat or to enhance watershed function should be strategically located to intercept contaminants thereby enhancing air and water quality. Native species should be used when feasible.

Filter strips established on slopes less than 5 percent are most effective. Filter strips may lose significant effectiveness as slope gradient increases unless the filter strip is used in

conjunction with other conservation practices that reduce runoff and control sheet and rill erosion.

Consider the benefit of filter strips as required setback areas for the application of manure products.

Surface thatch buildup in a filter strip will reduce water infiltration. Discuss management options such as prescribed burning that will reduce or control thatch buildup and maintain the functionality of the filter strip.

To reduce potential damage to the filter strip vegetation, consider using vegetation that displays tolerance to herbicides used in the upslope crop rotation. Warm season grasses have shown tolerance to some of the commonly used herbicides.

Consider grass species that sequester more carbon. Increasing the width of the filter strip will increase the potential for carbon sequestration.

Consider using this practice to enhance the conservation of declining species of wildlife including those that are threatened or endangered.

Surface water runoff may be prevented from entering the filter strip during vegetative establishment through the use of temporary diversions.

Consider using this practice to protect National Register listed or eligible (significant) traditional and archaeological cultural properties from potentially damaging contaminants.

PLANS AND SPECIFICATIONS

Site specifications and plans for establishment and maintenance of this practice shall be prepared for each field or treatment unit where a filter strip will be installed. A plan will include information about the location, construction sequence, vegetation establishment, and management and maintenance requirements.

Specifications will include:

- a) Length, width, and slope of the filter strip to accomplish the planned purpose (length refers to flow length across the filter strip).
- b) Species selection and planting rates to accomplish the planned purpose.

- c) Planting dates and care and handling of the seed or sprigs to ensure planted materials have an acceptable rate of survival.
- d) A statement that only viable, high quality, and regionally adapted seed or sprigs will be used.
- e) Site preparation, fertility, and planting methods sufficient to establish the selected species.

Site specifications shall be recorded using approved specification sheets, job sheets, narrative statements in the conservation plan, or other acceptable documentation.

OPERATION AND MAINTENANCE

For the purposes of removing sediment and filtering contaminants, permanent filter strip plantings should be harvested as appropriate to encourage dense growth, maintain an upright growth habit, and remove nutrients and other contaminants that are contained in the plant tissue.

Inspect the filter strip after storm events and repair damage. Redistribute sediment and organic materials that accumulate in the filter strip to maintain sheet flow characteristics and vegetation quality. Reseed disturbed areas.

The development of rills and small channels within the filter areas must be prevented. Needed repairs must be made immediately to re-establish sheet flow. Devices to disperse runoff will be constructed where needed to control concentrated flow.

To maintain or restore the filter strip's function, periodically regrade the filter strip area when sediment deposition at the filter strip – field

interface jeopardizes its function. Re-establish the appropriate filter strip vegetation.

If wildlife habitat is a purpose, destruction of vegetation within the portion of the filter strip devoted to the wildlife purpose should be minimized only to the extent needed to remove sediment and fill concentrated flow areas.

Vegetation must be maintained in a vigorous condition at the necessary stand density. Fertilize with commercial products as necessary to maintain the desired species composition and stand density. Timing, rate, and method of applying fertilizer must be controlled to protect environmentally sensitive areas downstream. Control undesired plant species and manage thatch buildup to achieve intended purposes.

Mowing, prescribed burning, or chemical control of undesirable weeds and woody growth is desired as long as sufficient planning and care is taken to protect the stand and water quality. Burning is allowed only with an approved burn plan.

Mowing shall be timed to minimize disturbance to wildlife during nesting seasons. The minimum stubble height following a mowing operation shall be 6 inches. Clipped vegetation will be removed from the filter strip to reduce thatch buildup.

Grazing shall not be permitted in the filter strip unless a controlled grazing system is being properly implemented. Grazing will be permitted under a controlled grazing system only when soil moisture conditions support livestock traffic without excessive compaction. The minimum grazing height will be 8 inches.